

## 10/731,268-267472-EIC 1700 SEARCH

STRUCTURE SEARCH

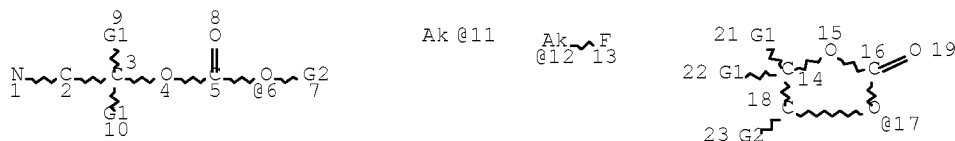
=&gt; d his 152

(FILE 'HCAPLUS' ENTERED AT 11:24:56 ON 06 AUG 2008)

L52 13 S L49 OR L51  
SAV TEMP L52 WEI268HCP/A

=&gt; d que 152

L2 27 SEA FILE=REGISTRY ABB=ON PLU=ON (463-79-6/BI OR  
1001-55-4/BI OR 105-58-8/BI OR 108-32-7/BI OR 110-67-8/  
BI OR 12031-65-1/BI OR 12057-17-9/BI OR 12190-79-3/BI  
OR 14283-07-9/BI OR 15365-14-7/BI OR 1656-48-0/BI OR  
1738-36-9/BI OR 18804-04-1/BI OR 21324-40-3/BI OR  
2141-62-0/BI OR 260362-83-2/BI OR 29935-35-1/BI OR  
311346-25-5/BI OR 56756-91-3/BI OR 616-38-6/BI OR  
623-53-0/BI OR 62957-60-2/BI OR 7782-42-5/BI OR  
7791-03-9/BI OR 852995-04-1/BI OR 90076-65-6/BI OR  
96-49-1/BI)  
L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON 14283-07-9/RN  
L5 1 SEA FILE=REGISTRY ABB=ON PLU=ON 21324-40-3/RN  
L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON 29935-35-1/RN  
L7 1 SEA FILE=REGISTRY ABB=ON PLU=ON CL4LI/MF  
L12 8 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND ?NITRILE?/CNS  
L13 6 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND ?CARBONAT?/CNS  
L16 STR



G3 24

VAR G1=H/11/12

VAR G2=11/12

VAR G3=6/17

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X3 C AT 11

ECOUNT IS M1-X3 C AT 12

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE

L20 SCR 1918 OR 2043 OR 1839 OR 1946 OR 1994 OR 2008 OR 2026  
OR 2021 OR 2016

L22 632 SEA FILE=REGISTRY SSS FUL L16 NOT L20

L24 1 SEA FILE=REGISTRY ABB=ON PLU=ON C2 H F6 N O4 S2 .  
LI/MF

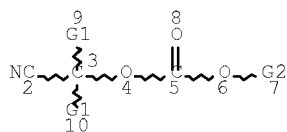
L25 9 SEA FILE=REGISTRY ABB=ON PLU=ON ?LITHIUM?/CNS AND  
?PERFLUORO?/CNS AND ?SULFONATE?/CNS

L26 14 SEA FILE=REGISTRY ABB=ON PLU=ON L24 OR L25 OR (L4 OR  
L5 OR L6 OR L7)

L27 486 SEA FILE=REGISTRY ABB=ON PLU=ON L22 AND 1/NR

L29 STR

# 10/731,268-267472-EIC 1700 SEARCH



Ak @11

Ak @12 F  
13

VAR G1=H/11/12

VAR G2=11/12

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X3 C AT 11

ECOUNT IS M1-X3 C AT 12

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L31 110 SEA FILE=REGISTRY SUB=L22 SSS FUL L29  
 L32 61 SEA FILE=REGISTRY ABB=ON PLU=ON L31 NOT 1-9/NR  
 L33 10769 SEA FILE=HCAPLUS ABB=ON PLU=ON L26  
 L34 53 SEA FILE=HCAPLUS ABB=ON PLU=ON L32  
 L35 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L34  
 L36 13366 SEA FILE=HCAPLUS ABB=ON PLU=ON L27  
 L37 3038 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L36  
 L38 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 AND L34  
 L39 24100 SEA FILE=HCAPLUS ABB=ON PLU=ON L13  
 L40 5994 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L39  
 L41 1243 SEA FILE=HCAPLUS ABB=ON PLU=ON L12  
 L42 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L41  
 L43 2 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND ?DIOXOLAN?/CNS  
  
 L44 18380 SEA FILE=HCAPLUS ABB=ON PLU=ON L43  
 L45 5828 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L44  
 L46 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND (L34 OR L41  
 OR L32)  
 L47 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 OR L38 OR L42 OR  
 L46  
 L48 QUE ABB=ON PLU=ON ELECTROLYT?  
 L49 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48  
 L50 QUE ABB=ON PLU=ON BATTER?  
 L51 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L50  
 L52 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 OR L51

STRUCTURE SEARCH RESULTS

=&gt; d 152 1-13 ibib ed abs hitstr hitind

T

L52 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1025526 HCAPLUS Full-text

DOCUMENT NUMBER: 147:368494

TITLE: Electrolyte for use in an energy storage device

INVENTOR(S): Aitchison, Phillip Brett; Nguyen, Hung Chi

PATENT ASSIGNEE(S): Cap-XX Limited, Australia

SOURCE: PCT Int. Appl., 32pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 2007101303	A1	20070913	WO 2007-AU284	

2007  
0307

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: AU 2006-901174 A

2006  
0308

ED Entered STN: 13 Sep 2007

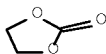
AB Electrolyte for use in an energy storage device such as a capacitor or supercapacitor which comprises a solvent (preferably propionitrile) and an ionic species (preferably methyltriethylammonium tetrafluoroborate). The electrolytes provide a low ESR rise rate, a high voltage and permit operation over a wide range of temps., which makes them beneficial for use in a range of energy storage devices such as digital wireless devices, wireless LAN devices, mobile telephones, computers, elec. or hybrid elec. vehicles.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-67-8, 3-Methoxypropionitrile 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1738-36-9, Methoxyacetone 14283-07-9, Lithium tetrafluoroborate

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolyte for use in energy storage device)

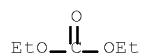
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)

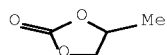


# 10/731,268-267472-EIC 1700 SEARCH

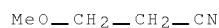
RN 105-58-8 HCAPLUS  
CN Carbonic acid, diethyl ester (CA INDEX NAME)



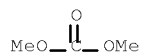
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



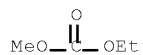
RN 110-67-8 HCAPLUS  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



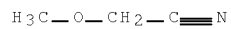
RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (CA INDEX NAME)



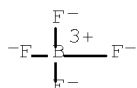
RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (CA INDEX NAME)



RN 1738-36-9 HCAPLUS  
CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

● Li<sup>+</sup>

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76
- ST electrolyte use energy storage device; capacitor  
electrolyte
- IT Battery electrolytes  
Computers  
Electric vehicles  
Electrolytes  
Energy storage systems  
Fuel cell electrolytes  
(electrolyte for use in energy storage device)
- IT Nitriles, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolyte for use in energy storage device)
- IT Telephones  
(mobile; electrolyte for use in energy storage device)
- IT Computers  
(notebook; electrolyte for use in energy storage device)
- IT Capacitors  
(supercapacitor; electrolyte for use in energy storage device)
- IT 60-29-7, Diethyl ether, uses 67-64-1, Acetone, uses 67-68-5, DmsO, uses 68-12-2, n,n-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-36-5, Acetyl chloride 75-52-5, Nitromethane, uses 78-82-0, Isobutyronitrile 79-20-9, Methyl acetate 79-24-3, Nitroethane 80-73-9, N,N'-Dimethylimidazolidinone 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 98-88-4, Benzoyl chloride 98-95-3, Nitrobenzene, uses 100-47-0, Benzonitrile, uses 105-58-8, Diethyl carbonate 107-06-2, 1,2-Dichloroethane, uses 107-12-0, Propionitrile 107-31-3, Methyl formate 108-24-7, Acetic anhydride 108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene carbonate 109-74-0, n-Butyronitrile 109-99-9, Thf, uses 110-67-8, 3-Methoxypropionitrile 110-71-4, 1,2-Dimethoxyethane 110-86-1, Pyridine, uses 111-69-3, Adiponitrile 126-33-0, Sulfolane 126-73-8, Tributyl phosphate, uses 127-19-5, n,n-Dimethylacetamide 140-29-4, Benzyl cyanide 141-78-6, Ethyl acetate, uses 142-92-5, Tetrabutylammonium tetrafluoroborate 512-56-1, Trimethyl phosphate 544-13-8, Glutaronitrile 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 657-39-6, Phenylphosphonic difluoride 680-31-9, Hexamethyl phosphoramidate 824-72-6, Phenylphosphonic dichloride 872-50-4, uses 1072-47-5, 4-Methyl-1,3-Dioxolane 1499-21-4, Diphenyl phosphonic chloride 1738-36-9, Methoxyacetonitrile 1923-70-2, Tetrabutylammonium perchlorate 3741-38-6, Ethylene sulfite 3967-55-3, 1,2-Dichloroethylene carbonate 4437-85-8, Butylene carbonate 7719-09-7, Thionyl chloride 7791-23-3, Selenium oxychloride 7791-25-5, Sulfuryl chloride 10025-87-3, Phosphorus oxychloride 14283-07-9, Lithium tetrafluoroborate 19836-78-3, n-Methyl-2-oxazolidinone 22432-68-4, Tetrachloroethylene carbonate 35895-69-3, Tetraethylammonium trifluoromethanesulfonate 56525-42-9, Methyl

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propyl carbonate 69444-47-9, Methyltriethylammonium  
tetrafluoroborate 90756-35-7 120226-79-1,  
Triethylmethylammonium perchlorate  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolyte for use in energy storage device)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L52 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:890872 HCAPLUS Full-text  
DOCUMENT NUMBER: 145:274882  
TITLE: Electrolyte for a lithium  
battery with improved safety  
INVENTOR(S): Yew, Kyoung-Han; Song, Eui-Hwan; Jung,  
Cheol-Soo; Lee, Yong-Beom  
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea  
SOURCE: Eur. Pat. Appl., 31pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 1696501	A1	20060830	EP 2006-110467	2006 0228
EP 1696501	B1	20071205		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
KR 2006095221	A	20060831	KR 2005-16691	2005 0228
US 20060194118	A1	20060831	US 2006-365299	2006 0228
JP 2006245001	A	20060914	JP 2006-52835	2006 0228
CN 1866605	A	20061122	CN 2006-10073931	2006 0228
PRIORITY APPLN. INFO.:			KR 2005-16691	A 2005 0228

OTHER SOURCE(S): MARPAT 145:274882

ED Entered STN: 01 Sep 2006

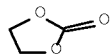
AB The present invention relates to an electrolyte for a lithium battery and a lithium  
battery comprising the same. The electrolyte includes a non-aqueous organic solvent, a  
lithium salt, and a first additive capable of forming a chelating complex with a  
transition metal and which is stable at voltages ranging from about 2.5 to about 4.8 V.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
carbonate 108-32-7, Propylene carbonate 616-38-6  
, Dimethyl carbonate 622-53-0, Methyl ethyl carbonate  
14283-07-9, Lithium tetrafluoroborate 21324-40-3  
, Lithium hexafluorophosphate 29935-35-1, Lithium  
hexafluoroarsenate 90076-65-6 131651-65-5

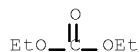
RL: DEV (Device component use); USES (Uses)  
(electrolyte for lithium battery with  
improved safety)

RN 96-49-1 HCAPLUS

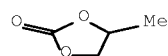
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



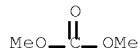
RN 105-58-8 HCAPLUS  
CN Carbonic acid, diethyl ester (CA INDEX NAME)



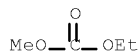
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



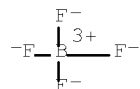
RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (CA INDEX NAME)



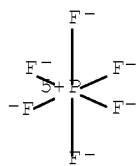
RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (CA INDEX NAME)



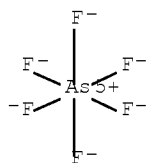
RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



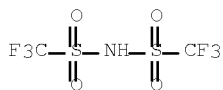
RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCAPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)

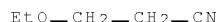


IT 2141-62-0, 3-Ethoxy-propionitrile  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte for lithium battery with



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improved safety)  
 RN 2141-62-0 HCAPLUS  
 CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST electrolyte lithium battery improved safety  
 IT Battery electrolytes  
 Safety  
 (electrolyte for lithium battery with improved safety)  
 IT Esters, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte for lithium battery with improved safety)  
 IT Secondary batteries  
 (lithium; electrolyte for lithium battery with improved safety)  
 IT Aromatic hydrocarbons, uses  
 Hydrocarbons, uses  
 RL: DEV (Device component use); USES (Uses)  
 (solvent; electrolyte for lithium battery with improved safety)  
 IT 77-77-0, Divinylsulfone 79-20-9, Methyl acetate 96-49-1  
 , Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 109-60-4, Propyl acetate 616-38-6,  
 Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 623-96-1,  
 Dipropyl carbonate 872-36-6, Vinylene carbonate 3741-38-6,  
 Ethylene sulfite 4437-85-8, Butylene carbonate 7439-93-2D,  
 Lithium, salt 7447-41-8, Lithium chloride, uses 7791-03-9  
 10377-51-2, Lithium iodide 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
 Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3,  
 Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9,  
 Lithium triflate 35363-40-7, Ethyl propyl carbonate, uses 37220-89-6,  
 Aluminum lithium oxide 56525-42-9, Methyl propyl carbonate, uses 90076-65-6  
 131651-65-5  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte for lithium battery with improved safety)  
 IT 91-15-6, 1,2-Benzenedicarbonitrile 91-16-7 105-37-3, Ethyl propionate 106-93-4,  
 1,2-Dibromoethane 110-18-9 110-61-2, Succinonitrile 110-71-4 111-55-7  
 119-84-6, 2-Chromanone 120-51-4, Benzyl benzoate 122-79-2, Phenyl acetate 141-78-6,  
 Ethyl acetate, uses 704-01-8 830-81-9, 1-Naphthyl acetate 1663-45-2,  
 DPPE 2141-62-0, 3-Ethoxy-propionitrile 2274-11-5, Ethylene glycol diacrylate 2388-68-3  
 6628-18-8 10340-88-2 13991-08-7 17427-91-7 17656-09-6, 2-Butenedinitrile 19289-58-8  
 19698-38-5 19752-95-5 34046-62-3 34112-17-9, 1,2-Cyclohexanedicarbonitrile 38383-49-2  
 63708-53-2 114435-02-8, Fluoroethylene carbonate 827300-14-1 827300-17-4  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte for lithium battery with improved safety)  
 IT 71-43-2, Benzene, uses 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 462-06-6,  
 Fluorobenzene 463-79-6D, Carbonic acid, ester 1330-20-7, Xylene, uses 27359-10-0,  
 Trifluorotoluene

## 10/731,268-267472-EIC 1700 SEARCH

RL: DEV (Device component use); USES (Uses)  
(solvent; electrolyte for lithium battery  
with improved safety)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L52 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:142721 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:216059  
TITLE: Lithium rechargeable battery pack  
INVENTOR(S): Shimizu, Ryuichi; Yamaguchi, Takitaro; Jung,  
Cheol-Soo; Chung, Hyun-Jei; Chang, Young-Chul  
PATENT ASSIGNEE(S): Japan  
SOURCE: U.S. Pat. Appl. Publ., 7 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060035144	A1	20060216	US 2005-194562	2005 0802
KR 2006044919	A	20060516	KR 2005-25912	2005 0329
JP 2006073513	A	20060316	JP 2005-225810	2005 0803
PRIORITY APPLN. INFO.:			JP 2004-226620	A 2004 0803
			KR 2005-25912	A 2005 0329

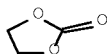
ED Entered STN: 16 Feb 2006

AB A lithium rechargeable battery includes a pos. electrode that intercalates and deintercalates lithium and a neg. electrode that intercalates and deintercalates lithium and has a current collector including Cu or a Cu alloy. In addition, the battery includes a separator interposed between the pos. electrode and the neg. electrode, and an electrolyte that transfers lithium ions.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(lithium rechargeable battery pack with improved over-discharge characteristics)

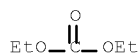
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)

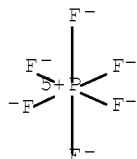


RN 105-58-8 HCAPLUS

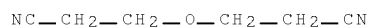
CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT 1656-48-0  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lithium rechargeable battery pack with improved  
 over-discharge characteristics)  
 RN 1656-48-0 HCAPLUS  
 CN Propanenitrile, 3,3'-oxybis- (CA INDEX NAME)

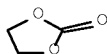


INCL 429188000; 429339000; 429307000; 429245000; 429231950  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium rechargeable battery pack  
 IT Battery electrolytes  
 (lithium rechargeable battery pack with improved  
 over-discharge characteristics)  
 IT Secondary batteries  
 (lithium; lithium rechargeable battery pack with  
 improved over-discharge characteristics)  
 IT Copper alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (lithium rechargeable battery pack with improved  
 over-discharge characteristics)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene  
 carbonate 105-58-8, Diethyl carbonate 7429-90-5,  
 Aluminum, uses 7440-50-8, Copper, uses 7782-42-5, Graphite,  
 uses 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (lithium rechargeable battery pack with improved  
 over-discharge characteristics)  
 IT 91-15-6, Phthalonitrile 109-77-3, Malononitrile 110-61-2,  
 Succinonitrile 111-69-3, Adiponitrile 111-97-7,  
 Thiodipropionitrile 544-13-8, Glutaronitrile 626-17-5,  
 IsoPhthalonitrile 629-40-3, Suberonitrile 646-20-8,  
 Pimelonitrile 1119-85-3, 3-Hexenedinitrile 1656-48-0  
 1675-69-0, Azelanitrile 1871-96-1, Sebaconitrile 2244-07-7,  
 Undecanenitrile 2437-25-4, Dodecanenitrile 2465-93-2,  
 Triscyanoethoxypropane 3386-87-6 4210-60-0,

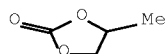
# 10/731,268-267472-EIC 1700 SEARCH

tert-Butylmalononitrile 7321-55-3, Dimethylmalononitrile  
 7528-78-1 16852-14-5 28906-50-5, Methylglutaronitrile  
 114435-02-8, Fluoroethylene carbonate 183582-92-5,  
 1,3,5-Cyclohexanetricarbonitrile  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lithium rechargeable battery pack with improved  
 over-discharge characteristics)

L52 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1028668 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:131721  
 TITLE: Non-corrosive electrolyte  
 compositions containing perfluoroalkylsulfonyl  
 imides for high power Li-ion batteries  
 AUTHOR(S): Di Censo, Davide; Exnar, Ivan; Graetzel,  
 Michael  
 CORPORATE SOURCE: Laboratoire de Photonique et Interfaces (LPI),  
 ISIC-Station 6, Ecole Polytechnique Federale  
 (EPFL), Lausanne, 1015, Switz.  
 SOURCE: Electrochemistry Communications (2005), 7(10),  
 1000-1006  
 CODEN: ECCMF9; ISSN: 1388-2481  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 23 Sep 2005  
 AB The use of LiN(SO<sub>2</sub>CF<sub>3</sub>)<sub>2</sub> in Li-ion secondary batteries was a promising alternative to  
 LiPF<sub>6</sub>. However, in practice this salt was not used in rechargeable batteries due to  
 severe corrosion of the Al current collector. The spinel Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> is an alternative  
 material for anodes instead of graphite and for batteries with this material, new  
 electrolyte compns. can be considered which solve the corrosion problem and allow the  
 use of imide-type salts. The corrosion of Al electrodes polarized at high voltages in  
 aprotic solvents containing LiSO<sub>3</sub>CF<sub>3</sub> (LiTf) or LiN(SO<sub>2</sub>CF<sub>3</sub>)<sub>2</sub> (LiTFSI) or LiN(SO<sub>2</sub>C<sub>2</sub>F<sub>5</sub>)<sub>2</sub>  
 (LiBETI) was studied. Despite the observation that in common battery solvents LiTFSI  
 causes severe corrosion of the Al current collector at 3.7 V (vs. Li), solvents having  
 a cyano-group showed a repassivation potential at 4.15 V (vs. Li). Based on the exptl.  
 observations and literature reports, a mechanism for the inhibiting action of nitriles  
 is proposed. The nitrile-based electrolytes allow the use of LiTFSI in com. batteries  
 with LiCoO<sub>2</sub> as cathode material on Al current collectors.  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene  
 carbonate 1738-36-9, Methoxyacetonitrile  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte containing; non-corrosive  
 electrolyte compns. containing perfluoroalkylsulfonyl  
 imides for Li-ion batteries)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (CA INDEX NAME)



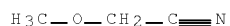
RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



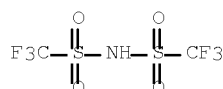
RN 1738-36-9 HCAPLUS

# 10/731,268-267472-EIC 1700 SEARCH

CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



IT 90076-65-6, LiTFSI  
 RL: CPS (Chemical process); DEV (Device component use); PEP  
 (Physical, engineering or chemical process); PROC (Process); USES  
 (Uses)  
 (electrolyte; non-corrosive electrolyte  
 compns. containing perfluoroalkylsulfonyl imides for Li-ion  
 batteries)  
 RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (1:1) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 72  
 ST fluoroalkyl sulfonyl imide noncorrosive electrolyte  
 lithium battery  
 IT Battery electrolytes  
 Corrosion  
 (non-corrosive electrolyte compns. containing  
 perfluoroalkylsulfonyl imides for Li-ion batteries)  
 IT 7429-90-5, Aluminum, uses  
 RL: DEV (Device component use); USES (Uses)  
 (current collector; in study of non-corrosive  
 electrolyte compns. containing perfluoroalkylsulfonyl  
 imides for Li-ion batteries)  
 IT 75-05-8, Acetonitrile, uses 96-48-0 96-49-1, Ethylene  
 carbonate 108-32-7, Propylene carbonate 110-71-4  
 1738-36-9, Methoxyacetonitrile  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte containing; non-corrosive  
 electrolyte compns. containing perfluoroalkylsulfonyl  
 imides for Li-ion batteries)  
 IT 33454-82-9, Lithium trifluoro methanesulfonate (LiSO<sub>3</sub>CF<sub>3</sub>)  
 90076-65-6, LiTFSI 132843-44-8, Lithium  
 bis(pentafluoroethanesulfonyl)imide  
 RL: CPS (Chemical process); DEV (Device component use); PEP  
 (Physical, engineering or chemical process); PROC (Process); USES  
 (Uses)  
 (electrolyte; non-corrosive electrolyte  
 compns. containing perfluoroalkylsulfonyl imides for Li-ion  
 batteries)  
 REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L52 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:567326 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:353605

# 10/731,268-267472-EIC 1700 SEARCH

TITLE: Nanostructured electrode materials for high rate, large format lithium ion batteries

AUTHOR(S): Glomski, Brian; Xu, Charlie; Miller, John; Silkowski, Chris; Huggett, Sarah; Heath, Mike; Sholtes, Phil; Walker, Stephanie; Wixom, Mike

CORPORATE SOURCE: T/J Technologies, Inc., USA

SOURCE: Society of Automotive Engineers, [Special Publication] SP (2005), SP-1962(Military Vehicle Technology), 435-438  
CODEN: SAESA2; ISSN: 0099-5908

PUBLISHER: Society of Automotive Engineers

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 01 Jul 2005

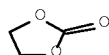
AB Lithium ion batteries are superior to NiMH batteries in energy d., but were excluded from the highest power d. applications due to safety and cost limitations. The cathode materials in conventional lithium ion cells are based on metal oxide materials, typically containing nickel or cobalt, expensive and reactive with the electrolyte. Metal oxides are electronic insulators, which can limit the rate performance of lithium ion cells, resulting in relatively high open circuit potentials. This limits the charge acceptance rate, since the polarization under high rate charging (> 10C) can exceed the potential limit of the electrolyte. Similarly, the open circuit potential of conventional graphitic anode materials is close to the lithium plating potential which also limits high charge rate acceptance. T/J Technologies has developed and demonstrated new bulk energy storage concepts based on nanostructured composite metal oxide anode and metal phosphate cathode electrodes. The composite design provides for high electronic conductivity, and the nanostructure limits the lithium transport distance. The open circuit potentials for these materials are displaced from the lithium plating and electrolyte decomposition potentials. These features contribute to high rate capability. In these systems, up to 25% of the C/10 capacity is retained at charge/discharge rates of >100 C. These cells have improved thermal stability and electrolyte oxidation resistance, excellent cycle life, high capacity retention at high rates, and potentially low cost for high volume/large format applications. With much higher energy d. than ultra capacitors or hybrid battery/capacitors, these ultra-high rate lithium batteries are ideally suited for hybrid elec. vehicles (Future Combat System).

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 1738-36-9, Methoxyacetonitrile 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)  
(nanostructured electrode materials for high rate, large format lithium ion batteries)

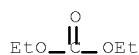
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



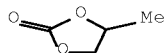
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)

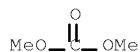


RN 108-32-7 HCAPLUS

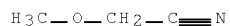
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



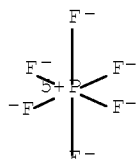
RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (CA INDEX NAME)



RN 1738-36-9 HCAPLUS  
 CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49, 72  
 ST nanostructured secondary battery electrode lithium ion  
 metal phosphate oxide  
 IT Oxides (inorganic), uses  
 RL: DEV (Device component use); USES (Uses)  
 (anode; nanostructured electrode materials for high rate, large  
 format lithium ion batteries)  
 IT Phosphates, uses  
 RL: DEV (Device component use); USES (Uses)  
 (cathode; nanostructured electrode materials for high rate,  
 large format lithium ion batteries)  
 IT Electric capacitance  
 (charging and discharging, stability over cycling;  
 nanostructured electrode materials for high rate, large format  
 lithium ion batteries)  
 IT Secondary batteries  
 (lithium; nanostructured electrode materials for high rate,  
 large format lithium ion batteries)  
 IT Battery electrodes  
 Battery electrolytes

# 10/731,268-267472-EIC 1700 SEARCH

Electric conductivity  
 Electric potential  
 Nanocomposites  
 Nanostructures  
 Open circuit potential  
   (nanostructured electrode materials for high rate, large format lithium ion batteries)

IT Fluoropolymers, uses  
 RL: DEV (Device component use); USES (Uses)  
   (nanostructured electrode materials for high rate, large format lithium ion batteries)

IT Carbon black, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (nanostructured electrode materials for high rate, large format lithium ion batteries)

IT Thermal analysis  
   (of electrode active material in electrolyte solvent; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT Porosity  
   (of electrode catalysts; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 7782-42-5, Graphite, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (anode, MCMB; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 7439-93-2, Lithium, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (anode; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 RL: DEV (Device component use); USES (Uses)  
   (cathode control material; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 7440-50-8, Copper, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (foil, anode substrate; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 7429-90-5, Aluminum, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (foil, cathode substrate; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 1738-36-9, Methoxyacetonitrile 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Polyvinylidene difluoride 244761-29-3, Lithium bis(oxalato)borate  
 RL: DEV (Device component use); USES (Uses)  
   (nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 9003-07-0, Celgard 3501 685136-08-7, Celgard 2325  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
   (separator; nanostructured electrode materials for high rate, large format lithium ion batteries)

IT 12031-95-7, Lithium titanate (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) 15365-14-7, Iron lithium phosphate (FeLiPO<sub>4</sub>)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
   (temperature or size-modified; nanostructured electrode materials for



## 10/731,268-267472-EIC 1700 SEARCH

high rate, large format lithium ion batteries)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L52 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:497321 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:29529  
TITLE: Nonaqueous electrolytes having an  
extended temperature range for battery  
applications  
INVENTOR(S): Sun, Luying  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 17 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20050123835	A1	20050609	US 2003-731268	2003 1209
PRIORITY APPLN. INFO.: US 2003-731268				2003 1209

OTHER SOURCE(S): MARPAT 143:29529

ED Entered STN: 10 Jun 2005

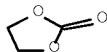
AB The present invention discloses non-aqueous electrolytes having an extended temperature range for battery applications. The electrolyte comprises an electrolyte salt, e.g., LiPF<sub>6</sub>, a first non-aqueous solvent, and a second non-aqueous solvent. The electrolyte of the present invention has higher ionic conductivity, lower f.p., and lower vapor pressure at high temperature than com. electrolytes. These non-aqueous electrolytes can be used, for example, in lithium-ion batteries. Methods of making lithium-ion batteries are also described.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-67-8, 3-Methoxypropionitrile 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1001-55-4, 2-Acetoxyacetonitrile 1656-48-0 1738-36-9, Methoxyacetonitrile 2141-62-0, 3-Ethoxypropionitrile 14283-07-9, Lithium tetrafluoroborate 18804-04-1, uses 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 56756-91-3 62957-60-2, Ethoxyacetonitrile 90076-65-6 852995-04-1

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolytes having extended temperature range for  
battery applications)

RN 96-49-1 HCAPLUS

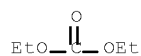
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



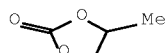
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)

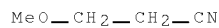
# 10/731,268-267472-EIC 1700 SEARCH



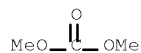
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



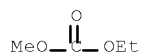
RN 110-67-8 HCAPLUS  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



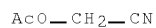
RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (CA INDEX NAME)



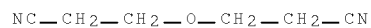
RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (CA INDEX NAME)



RN 1001-55-4 HCAPLUS  
CN Acetonitrile, 2-(acetyloxy)- (CA INDEX NAME)



RN 1656-48-0 HCAPLUS  
CN Propanenitrile, 3,3'-oxybis- (CA INDEX NAME)



RN 1738-36-9 HCAPLUS

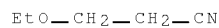
# 10/731,268-267472-EIC 1700 SEARCH

CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCAPLUS

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



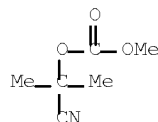
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



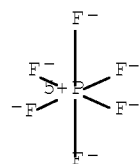
RN 18804-04-1 HCAPLUS

CN Carbonic acid, 1-cyano-1-methylethyl methyl ester (9CI) (CA INDEX NAME)



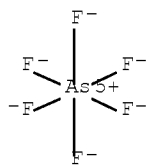
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

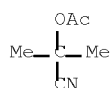


RN 29935-35-1 HCAPLUS

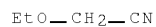
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



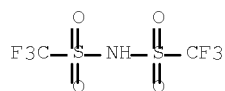
RN 56756-91-3 HCAPLUS  
 CN Propanenitrile, 2-(acetyloxy)-2-methyl- (CA INDEX NAME)



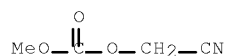
RN 62957-60-2 HCAPLUS  
 CN Acetonitrile, 2-ethoxy- (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 852995-04-1 HCAPLUS  
 CN Carbonic acid, cyanomethyl methyl ester (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-52; H01M004-50; H01M004-58  
 INCL 429326000; 429330000; 429339000; 429231300; 429231100; 429223000;  
 429221000; 429224000; 429231800

# 10/731,268-267472-EIC 1700 SEARCH

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 72, 76  
 ST battery nonaq electrolyte extended temp range  
 IT Electrochromic devices  
 Sensors  
 (electrolyte; nonaq. electrolytes having  
 extended temperature range for battery applications)  
 IT Secondary batteries  
 (lithium; nonaq. electrolytes having extended temperature  
 range for battery applications)  
 IT Battery electrolytes  
 Electrolytic capacitors  
 Fuel cell electrolytes  
 Ionic conductivity  
 (nonaq. electrolytes having extended temperature range for  
 battery applications)  
 IT Carbonaceous materials (technological products)  
 Coke  
 Esters, uses  
 Ethers, uses  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolytes having extended temperature range for  
 battery applications)  
 IT Sulfonic acids, uses  
 RL: DEV (Device component use); USES (Uses)  
 (perfluoro, lithium salt; nonaq. electrolytes having  
 extended temperature range for battery applications)  
 IT Perfluoro compounds  
 RL: DEV (Device component use); USES (Uses)  
 (sulfonic acids, lithium salt; nonaq. electrolytes  
 having extended temperature range for battery applications)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 108-32-7, Propylene carbonate 110-67-8  
 , 3-Methoxypropionitrile 463-79-6D, Carbonic acid, ester, cyclic  
 463-79-6D, Carbonic acid, ester, linear 616-38-6,  
 Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 1001-55-4, 2-Acetoxyacetone nitrile 1656-48-0  
 1738-36-9, Methoxyacetone nitrile 2141-62-0,  
 3-Ethoxypropionitrile 7782-42-5, Graphite, uses 7791-03-9,  
 Lithium perchlorate 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>)  
 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt  
 lithium oxide (CoLiO<sub>2</sub>) 14283-07-9, Lithium  
 tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo4  
 18804-04-1, uses 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium  
 hexafluoroarsenate 56756-91-3 62957-60-2,  
 Ethoxyacetone nitrile 90076-65-6 260362-83-2  
 311346-25-5, Cobalt lithium nickel oxide (Co<sub>0.1</sub>-0.9LiNi<sub>0.1</sub>-0.9O<sub>2</sub>)  
 352995-04-1  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolytes having extended temperature range for  
 battery applications)

L52 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:286861 HCAPLUS Full-text

DOCUMENT NUMBER: 140:290041

TITLE: Electrolyte composition having  
 improved aluminum anticorrosive properties

INVENTOR(S): Exnar, Ivan; Di Censo, Davide

PATENT ASSIGNEE(S): Xoliox S. A., Switz.

SOURCE: Eur. Pat. Appl., 22 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

## 10/731,268-267472-EIC 1700 SEARCH

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1406336	A1	20040407	EP 2002-405848	2002 1001

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, SK

PRIORITY APPLN. INFO.: EP 2002-405848  
2002  
1001

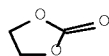
ED Entered STN: 08 Apr 2004

AB The invention relates to an electrolyte composition for use in an electrochem. battery having an aluminum current collector, the composition comprising an imide salt and a nitrile-based solvent.

IT 96-49-1, Ethylene carbonate 105-58-3, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1738-36-9, Methoxyacetonitrile 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide  
RL: DEV (Device component use); USES (Uses)  
(electrolyte composition having improved aluminum anticorrosive properties)

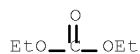
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



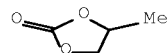
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



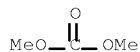
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



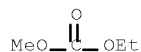
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (CA INDEX NAME)

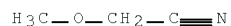


# 10/731,268-267472-EIC 1700 SEARCH

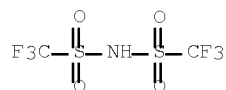
RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (CA INDEX NAME)



RN 1738-36-9 HCAPLUS  
CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M006-18; H01M004-66  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72  
ST battery electrolyte compn improved aluminum  
anticorrosive property  
IT Amperometry  
Battery electrolytes  
Corrosion prevention  
Plasticizers  
(electrolyte composition having improved aluminum  
anticorrosive properties)  
IT Fluoropolymers, uses  
Imides  
Polyoxyalkylenes, uses  
Polyurethanes, uses  
RL: DEV (Device component use); USES (Uses)  
(electrolyte composition having improved aluminum  
anticorrosive properties)  
IT Nitriles, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(solvent; electrolyte composition having improved aluminum  
anticorrosive properties)  
IT 7429-90-5, Aluminum, uses  
RL: DEV (Device component use); USES (Uses)  
(current collector; electrolyte composition having  
improved aluminum anticorrosive properties)  
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene  
carbonate 105-58-8, Diethyl carbonate 108-32-7  
, Propylene carbonate 109-99-9, Thf, uses 110-71-4  
616-38-6, Dimethyl carbonate 623-53-0, Ethyl

# 10/731,268-267472-EIC 1700 SEARCH

methyl carbonate 646-06-0, 1,3-Dioxolane 1738-36-9,  
Methoxyacetonitrile 9003-05-8, Polyacrylamide 9003-20-7,  
Polyvinylacetate 9003-21-8, Polymethylacrylate 9003-39-8,  
Polyvinylpyrrolidone 12031-95-7, Lithium titanium oxide  
114ti5O12 12190-79-3, Cobalt lithium oxide colio2 24937-79-9,  
Polyvinylidene fluoride 25322-68-3, Peo 26809-02-9,  
Polyacetonitrile 57619-91-7, Polytetraethylene glycol diacrylate  
73506-93-1, Diethoxyethane 90076-65-6, Lithium  
bis(trifluoromethylsulfonyl)imide 132843-44-8, Lithium  
bis(perfluoroethylsulfonyl)imide

RL: DEV (Device component use); USES (Uses)  
(electrolyte composition having improved aluminum  
anticorrosive properties)

IT 143-24-8, Tetraglyme 872-50-4, n-Methylpyrrolidone, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolyte composition having improved aluminum  
anticorrosive properties)

L52 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2000:166259 HCAPLUS Full-text  
DOCUMENT NUMBER: 132:210209  
TITLE: Secondary nonaqueous-electrolyte  
batteries with electrolytes  
containing cyanoethoxy compounds  
INVENTOR(S): Kobayashi, Aya; Izuchi, Shuichi  
PATENT ASSIGNEE(S): Yuasa Battery Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000077096	A	20000314	JP 1998-244674	1998 0831

PRIORITY APPLN. INFO.: JP 1998-244674  
1998  
0831

OTHER SOURCE(S): MARPAT 132:210209

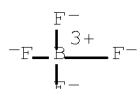
ED Entered STN: 14 Mar 2000

AB Claimed batteries are equipped with electrolytes containing cyanoethoxy compds.  
R(OC2H4CN)n (n = 1-4; R = CmH2m+2-n, CmH2m+2-n(OC2H4)p, CmH2m+2-nCO, or CmH2m+2-nOCO; m  
= 1-3; p = 1-4) as nonaq. solvents for Li salts. Optionally, the batteries are  
equipped with gelled polymer electrolytes. The batteries have long cycle life at low  
temperature

IT 14283-07-9, Lithium tetrafluoroborate  
RL: DEV (Device component use); USES (Uses)  
(electrolytes; nonaq. batteries with  
electrolytes containing cyanoethoxy compds. for long cycle  
life at low temperature)

RN 14283-07-9 HCAPLUS

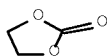
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



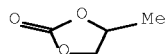


# 10/731,268-267472-EIC 1700 SEARCH

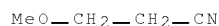
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8 1656-48-0, Bis-2-cyanoethyl ether 2141-62-0  
 RL: DEV (Device component use); USES (Uses)  
 (solvents; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (CA INDEX NAME)



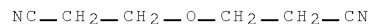
RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



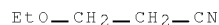
RN 110-67-8 HCAPLUS  
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 1656-48-0 HCAPLUS  
 CN Propanenitrile, 3,3'-oxybis- (CA INDEX NAME)



RN 2141-62-0 HCAPLUS  
 CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST cyanoethoxy compd nonaq electrolyte solvent  
 battery; lithium battery electrolyte  
 solvent cyanoethoxy compd  
 IT Secondary batteries  
 (lithium; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)  
 IT Battery electrolytes

## 10/731,268-267472-EIC 1700 SEARCH

(nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT Polyoxyalkylenes, uses  
 RL: DEV (Device component use); USES (Uses)  
 (trifunctional acrylates, lithium complexes, gelled electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT 14283-07-9, Lithium tetrafluoroborate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes  
 RL: DEV (Device component use); USES (Uses)  
 (gelled electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8 1656-48-0, Bis-2-cyanoethyl ether 2141-62-0 3386-87-6 5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate 35633-51-3 260362-83-2  
 RL: DEV (Device component use); USES (Uses)  
 (solvents; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

L52 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:144319 HCAPLUS Full-text

DOCUMENT NUMBER: 132:183113

TITLE: Secondary nonaqueous electrolyte batteries

INVENTOR(S): Tabuchi, Toru; Aoki, Takashi; Nakamitsu, Kazuhiro; Mizutani, Minoru

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan; GS Melcotec K. K.

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000067913	A	20000303	JP 1998-305833	

1998  
1027

PRIORITY APPLN. INFO.: JP 1998-159629 A

1998  
0608

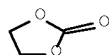
ED Entered STN: 03 Mar 2000

AB The batteries use a nonaq. Li salt electrolyte solution containing a cyano group containing ether or glycol and a carbonate ester.

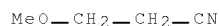
IT 96-49-1, Ethylene carbonate 110-67-8  
 623-53-0, Ethyl methyl carbonate 21324-40-3,  
 Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solvent mixts. containing cyano ethers or cyano glycols and carbonate esters for secondary lithium batteries)

RN 96-49-1 HCAPLUS

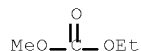
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



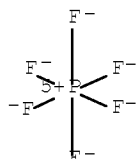
RN 110-67-8 HCAPLUS  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IC ICM H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary lithium battery electrolyte soln  
compn; lithium battery electrolyte cyano ether  
carbonate ester; cyano glycol carbonate ester lithium  
battery electrolyte  
IT Battery electrolytes  
(electrolyte solvent mixts. containing cyano ethers or  
cyano glycols and carbonate esters for secondary lithium  
batteries)  
IT 96-49-1, Ethylene carbonate 110-67-8  
623-53-0, Ethyl methyl carbonate 3386-87-6  
21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solvent mixts. containing cyano ethers or  
cyano glycols and carbonate esters for secondary lithium  
batteries)

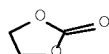
L52 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 1999:737130 HCAPLUS Full-text  
DOCUMENT NUMBER: 131:325078

# 10/731,268-267472-EIC 1700 SEARCH

TITLE: Primary or secondary electrochemical generator  
 INVENTOR(S): Gratzel, Michael; Sugnaux, Francois R.;  
 Pappas, Nicholas  
 PATENT ASSIGNEE(S): Ecole Polytechnique Federale De Lausanne  
 (Epfl) Sri, Switz.  
 SOURCE: PCT Int. Appl., 29 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

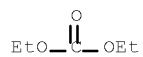
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9959218	A1	19991118	WO 1999-EP3261	1999 0508
W: CN, JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1086506	A1	20010328	EP 1999-932452	1999 0508
R: CH, DE, FR, GB, LI, NL, IE				
PRIORITY APPLN. INFO.:			EP 1998-810431	A 1998 0512
			WO 1999-EP3261	W 1999 0508

ED Entered STN: 19 Nov 1999  
 AB A high power d. and high capacity primary or secondary electrochem. generator has at least one electrode composed of an elec. active solid material, the electrode having a mesoporous texture forming a bi-continuous junction of large sp. surface area with the electrolyte. The specific morphol. of the electroactive material permits high rates of ion insertion in the solid while allowing for rapid ion transport in electrolyte present in the porous space of the electrode. Specific methods for preparation of the electrode are disclosed, in particular the control of the electrode morphol. by use of surfactant assemblies such as surfactant micelles exerting a templating effect during the chemical synthesis of the electroactive material.  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 1738-36-9, Methoxyacetonitrile 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 90076-65-6 131651-65-5, 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt  
 RL: DEV (Device component use); USES (Uses)  
 (primary or secondary electrochem. generator)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (CA INDEX NAME)

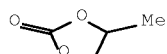


RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (CA INDEX NAME)

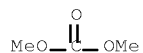
# 10/731,268-267472-EIC 1700 SEARCH



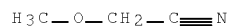
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



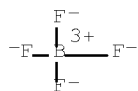
RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (CA INDEX NAME)



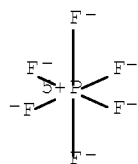
RN 1738-36-9 HCAPLUS  
CN Acetonitrile, 2-methoxy- (CA INDEX NAME)



RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

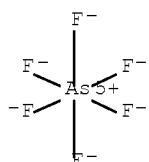


RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

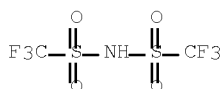


# 10/731,268-267472-EIC 1700 SEARCH

RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCAPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-48; H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery electrode transition metal oxide chalcogenide  
 IT Primary batteries  
 Secondary batteries  
 (lithium; primary or secondary electrochem. generator)  
 IT Battery electrodes  
 (primary or secondary electrochem. generator)  
 IT 96-48-0 96-49-1, Ethylene carbonate 105-58-8,  
 Diethyl carbonate 108-32-7, Propylene carbonate  
 616-38-6, Dimethyl carbonate 646-06-0, Dioxolane  
 1309-37-1, Iron oxide (Fe<sub>2</sub>O<sub>3</sub>), uses 1312-43-2, Indium oxide  
 1313-13-9, Manganese dioxide, uses 1313-27-5, Molybdenum  
 trioxide, uses 1313-96-8, Niobium pentoxide 1314-35-8,  
 Tungsten trioxide, uses 1314-62-1, Vanadium pentoxide, uses  
 1317-33-5, Molybdenum sulfide mos<sub>2</sub>, uses 1317-61-9, Iron oxide

# 10/731,268-267472-EIC 1700 SEARCH

(Fe3O4), uses 1738-36-9, Methoxyacetonitrile  
 2923-17-3, Lithium trifluoroacetate 11113-84-1, Ruthenium oxide  
 11126-12-8, Iron sulfide 11129-18-3, Cerium oxide 12039-13-3,  
 Titanium disulfide 12055-23-1, Hafnium dioxide 12067-45-7,  
 Titanium diselenide 12138-09-9, Tungsten sulfide ws2  
 12645-46-4, Iridium oxide 13463-67-7, Titania, uses  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
 Lithium tetrafluoroborate 18424-17-4, Lithium  
 hexafluoroantimonate 21324-40-3, Lithium  
 hexafluorophosphate 26856-69-9, Methoxypropionitrile  
 28106-65-2, Tetrafluoropropanol 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate 37245-92-4,  
 Ruthenium sulfide 39300-70-4, Lithium nickel oxide 39457-42-6,  
 Lithium manganese oxide 52627-24-4, Cobalt lithium oxide  
 59763-75-6, Tantalum oxide 66216-18-0 90076-65-6  
 131344-56-4, Cobalt lithium nickel oxide 131651-65-5,  
 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt  
 132404-42-3 248588-09-2, Indium lithium manganese sodium oxide  
 RL: DEV (Device component use); USES (Uses)

(primary or secondary electrochem. generator)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L52 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:206870 HCAPLUS Full-text

DOCUMENT NUMBER: 130:252076

TITLE: Preparation of alcohol cyanoethyl ethers for  
 lithium batteries and organic  
 electrolytic solutions containing them

INVENTOR(S): Nishikawa, Satoshi

PATENT ASSIGNEE(S): Sunstar Engineering, Inc., Japan; Uni Sunstar  
 Bv

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 11080112	A	19990326	JP 1997-245178	1997 0910
JP 3946825	B2	20070718		
PRIORITY APPLN. INFO.:			JP 1997-245178	1997 0910

OTHER SOURCE(S): MARPAT 130:252076

ED Entered STN: 01 Apr 1999

AB (R1O)aR2(OCH2CH2CN)b (I; R1 = C11-3 alkyl; R2 = residue of alcs. having 1-4 OH groups;  
 a = 0-3; b = 1-4; a + b = 1-4) are prepared by cyanoethylation of alcs. with  
 acrylonitrile (II) in the presence of  $\geq 1$  selected from (a) LiOH and (b) Li metal, Li  
 alkoxides, compds. comprising Li and active methylene compds. such as Li  
 acetylacetonate and in the absence of H2O. The organic electrolyte solns. for Li  
 batteries or Li ion secondary batteries comprise I and Li salts dissolved therein. The  
 electrolyte solns. may contain aprotic polar compds. This method gives I without  
 discoloration due to polymerization of II. II was added dropwise to a mixture of  
 ethylene glycol and LiOH.H2O at 40-0° over 2 h, and the reaction mixture was further  
 stirred at 40-50° for 3 h to give ethylene glycol bis(2-cyanoethyl) ether (III) with  
 purity  $\geq 99.5\%$ . LiClO4 was dissolved in III to give an electrolyte solution showing  
 conductivity  $2.7 \times 10^{-3} \text{ S}\cdot\text{cm}^{-1}$ .

IT 110-67-8P, 2-Cyanoethyl methyl ether 2141-62-0P

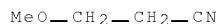
# 10/731,268-267472-EIC 1700 SEARCH

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

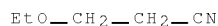
RN 110-67-8 HCAPLUS

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCAPLUS

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

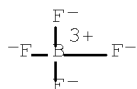


IT 14283-07-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

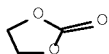


IT 96-49-1, Ethylene carbonate

RL: TEM (Technical or engineered material use); USES (Uses)  
(solvent; preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



IC ICM C07C255-13

ICS B01J023-04; C07C253-30; H01M010-40; C07B061-00

CC 23-19 (Aliphatic Compounds)

Section cross-reference(s): 52

ST polyol cyanoethyl ether prepn battery

electrolyte; alc cyanoethyl ether prepn battery

electrolyte; acrylonitrile cyanoethylation polyol lithium



# 10/731,268-267472-EIC 1700 SEARCH

hydroxide catalyst; ethylene glycol cyanoethyl ether  
battery electrolyte

IT Polar solvents  
Polar solvents  
(aprotic; preparation of (poly)alc. cyanoethyl ethers as  
battery electrolytes by LiOH-catalyzed  
reaction of polyols and acrylonitrile)

IT Cyanoethylation  
Cyanoethylation  
(catalysts; preparation of (poly)alc. cyanoethyl ethers as  
battery electrolytes by LiOH-catalyzed  
reaction of polyols and acrylonitrile)

IT Ethylation catalysts  
Ethylation catalysts  
(cyanoethylation catalysts; preparation of (poly)alc. cyanoethyl  
ethers as battery electrolytes by  
LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Primary batteries  
Secondary batteries  
(lithium; preparation of (poly)alc. cyanoethyl ethers as  
battery electrolytes by LiOH-catalyzed  
reaction of polyols and acrylonitrile)

IT Alcohols, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(polyhydric; preparation of (poly)alc. cyanoethyl ethers as  
battery electrolytes by LiOH-catalyzed  
reaction of polyols and acrylonitrile)

IT Battery electrolytes  
(preparation of (poly)alc. cyanoethyl ethers as battery  
electrolytes by LiOH-catalyzed reaction of polyols and  
acrylonitrile)

IT Alcohols, reactions  
Glycols, reactions  
Polyoxyalkylenes, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of (poly)alc. cyanoethyl ethers as battery  
electrolytes by LiOH-catalyzed reaction of polyols and  
acrylonitrile)

IT 7439-93-2, Lithium, uses 18115-70-3, Lithium acetylacetonate,  
uses  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of (poly)alc. cyanoethyl ethers as battery  
electrolytes by LiOH-catalyzed reaction of polyols and  
acrylonitrile)

IT 112-27-6P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation of (poly)alc. cyanoethyl ethers as battery  
electrolytes by LiOH-catalyzed reaction of polyols and  
acrylonitrile)

IT 110-47-4P 110-67-8P, 2-Cyanoethyl methyl ether  
2141-62-0P 2465-91-0P 2465-93-2P 3386-87-6P,  
Ethylene glycol bis(2-cyanoethyl) ether 6959-71-3P  
9003-07-0DP, Polypropylene, triol derivs., bis(2-cyanoethyl)ether  
16792-83-9P, Propylene glycol bis(2-cyanoethyl) ether  
22397-30-4P 22397-31-5P, Diethylene glycol bis(2-cyanoethyl)  
ether 25265-71-8DP, Dipropylene glycol, ether with 2-cyanoethyl  
and Me 35633-45-5P 35633-50-2P 35633-51-3P 39377-81-6P  
39927-06-5P, Polyethylene glycol bis(2-cyanoethyl) ether  
51299-82-2P 57741-46-5P, Triethylene glycol bis(2-cyanoethyl)  
ether 59113-36-9DP, Diglycerin, ether with tetrakis(2-  
cyanoethyl) 61579-08-6P 180316-31-8P, 2,5,8,11-  
Tetraoxatetradecane-14-nitrile 221628-60-0P 221628-62-2P  
221628-64-4P  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); TEM  
(Technical or engineered material use); PREP (Preparation); USES  
(Uses)

# 10/731,268-267472-EIC 1700 SEARCH

(preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

- IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 102-71-6, Triethanolamine, reactions 107-13-1, 2-Propenenitrile, reactions 107-21-1, 1,2-Ethanediol, reactions 109-86-4, Ethylene glycol monomethyl ether 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, reactions 111-77-3, Diethylene glycol monomethyl ether 112-35-6, Triethylene glycol monomethyl ether 115-77-5, reactions 122-20-3, Triisopropanolamine 1320-67-8, Propylene glycol monomethyl ether 4439-20-7 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 25618-55-7 34590-94-8, Dipropylene glycol monomethyl ether 52125-53-8, Propylene glycol monoethyl ether 59113-36-9, Diglycerin
- RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT 7791-03-9, Lithium perchlorate 14283-07-9
- RL: TEM (Technical or engineered material use); USES (Uses)  
(preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT 1310-65-2, Lithium hydroxide
- RL: CAT (Catalyst use); USES (Uses)  
(preparation of polyol cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT 96-49-1, Ethylene carbonate
- RL: TEM (Technical or engineered material use); USES (Uses)  
(solvent; preparation of (poly)alc. cyanoethyl ethers as battery electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

L52 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:129574 HCAPLUS Full-text  
DOCUMENT NUMBER: 126:133588  
ORIGINAL REFERENCE NO.: 126:25770h,25771a  
TITLE: Nonaqueous electrolyte  
batteries using electrolytes  
containing self discharge inhibitors  
INVENTOR(S): Jinno, Maruo; Uehara, Mayumi; Sakurai,  
Atsushi; Nishio, Koji; Saito, Toshihiko  
PATENT ASSIGNEE(S): Sanyo Denki Kk, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 08321312	A	19961203	JP 1995-150844	1995 0524
PRIORITY APPLN. INFO.:			JP 1995-150844	1995 0524

ED Entered STN: 26 Feb 1997

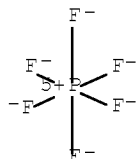
# 10/731,268-267472-EIC 1700 SEARCH

AB Li batteries use electrolytes containing LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> dissolved in high dielec. constant solvent selected from ethylene carbonate, propylene carbonate, and butylene carbonate; where the electrolytes contain 1-20 volume% additive selected from triethylamine, n-butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2-methoxy ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile, benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me sulfide, 2-Me thiophene, 1-butane thiol, benzenethiol, di-Me sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite, butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone, DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinite. The electrolytes may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the solvents and the solutes in the electrolytes to form coatings on the anodes for prevention of the reaction between the electrolytes and the anodes, the batteries have improved storage property. These batteries have long shelf life.

IT 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte solns. containing self discharge inhibitors for lithium batteries)

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

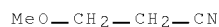


● Li<sup>+</sup>

IT 110-67-8, 3-Methoxypropionitrile  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (self discharge inhibitors in nonaq. electrolyte solns. for lithium batteries)

RN 110-67-8 HCAPLUS

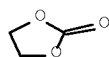
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (solvents for nonaq. electrolyte solns. containing self discharge inhibitors for lithium batteries)

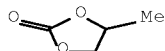
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



## 10/731,268-267472-EIC 1700 SEARCH

RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)

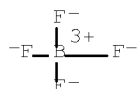


IC ICM H01M006-16  
 ICS H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery electrolyte self discharge inhibitor  
 IT Battery electrolytes  
 (self discharge inhibitors in nonaq. electrolyte solns. for lithium batteries)  
 IT 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte solns. containing self discharge inhibitors for lithium batteries)  
 IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5, Dimethylsulfoxide, uses 67-71-0, Dimethylsulfone 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7, Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane, uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9, N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses 107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses 109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses 109-79-5, 1-Butanethiol 110-67-8, 3-Methoxypropionitrile 110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0, Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4, Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole 290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8, 3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2, Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5, Ethylmethylsulfide 666-15-9 872-50-4, N-Methyl-2-pyrrolidone, uses 1193-10-8, 3-Methylsulfolene 1912-28-3, Methyl ethyl sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine 15980-15-1, 1,4-Thioxane 19836-78-3 28452-93-9, Butadienesulfone  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (self discharge inhibitors in nonaq. electrolyte solns. for lithium batteries)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (solvents for nonaq. electrolyte solns. containing self discharge inhibitors for lithium batteries)

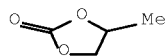
L52 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1995:361913 HCAPLUS Full-text  
 DOCUMENT NUMBER: 122:145421  
 ORIGINAL REFERENCE NO.: 122:26779a,26782a  
 TITLE: Model for oxide film growth in aluminum anodization  
 AUTHOR(S): Izotov, V. Yu.; Maletin, Yu. A.; Koval, L. B.; Mironova, A. A.; Kozachkov, S. G.; Nezdorovin, V. P.  
 CORPORATE SOURCE: V. I. Vernadsky Inst., National Acad. Sci.

# 10/731,268-267472-EIC 1700 SEARCH

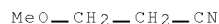
SOURCE: Ukraine, Kiev, 252680, Ukraine  
 Teoreticheskaya i Eksperimental'naya Khimiya  
 (1994), 30(5), 272-6  
 CODEN: TEKHA4; ISSN: 0497-2627  
 PUBLISHER: Institut Fizicheskoi Khimii im. L. V.  
 Pisarzhevskogo AN Ukrainy  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Russian  
 ED Entered STN: 17 Feb 1995  
 AB A theor. model was developed to describe the formation of amorphous or polycryst. oxide  
 films on the surface of Al during its anodization. Satisfactory agreement between the  
 model and exptl. data on anodization in electrolytes based on various dicarboxylic  
 acids is illustrated.  
 IT 14283-07-9, Lithium tetrafluoroborate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (aluminum anodization in baths containing various solvents and  
 salts)  
 RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



IT 108-32-7, Propylene carbonate 110-67-8,  
 3-Methoxypropionitrile  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (aluminum anodization in baths containing various solvents and  
 salts)  
 RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCAPLUS  
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-7 (Electrochemistry)  
 Section cross-reference(s): 56  
 IT 429-06-1, Tetraethylammonium tetrafluoroborate 1113-38-8,  
 Ammonium oxalate 2226-88-2, Ammonium succinate  
 14283-07-9, Lithium tetrafluoroborate 15967-97-2  
 18815-40-2, Ammonium malonate 19090-60-9, Ammonium adipate  
 29750-34-3, Ammonium glutarate 41606-95-5, Tetraethylammonium  
 phthalate, uses 161204-77-9, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (aluminum anodization in baths containing various solvents and

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salts)  
IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses  
79-16-3, N-Methylacetamide 96-48-0,  $\gamma$ -Butyrolactone  
107-21-1, Ethylene glycol, uses 108-32-7, Propylene  
carbonate 110-67-8, 3-Methoxypropionitrile  
111754-40-6, Tetraethylammonium maleate, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(aluminum anodization in baths containing various solvents and  
salts)

# 10/731,268-267472-EIC 1700 SEARCH

## FULL SEARCH HISTORY

=> d his nofile

(FILE 'HOME' ENTERED AT 10:15:09 ON 06 AUG 2008)

FILE 'HCAPLUS' ENTERED AT 10:15:52 ON 06 AUG 2008

E US20050123835/PN

L1 1 SEA ABB=ON PLU=ON US20050123835/PN  
D ALL  
SEL RN

FILE 'REGISTRY' ENTERED AT 10:16:47 ON 06 AUG 2008

L2 27 SEA ABB=ON PLU=ON (463-79-6/BI OR 1001-55-4/BI OR  
105-58-8/BI OR 108-32-7/BI OR 110-67-8/BI OR 12031-65-1  
/BI OR 12057-17-9/BI OR 12190-79-3/BI OR 14283-07-9/BI  
OR 15365-14-7/BI OR 1656-48-0/BI OR 1738-36-9/BI OR  
18804-04-1/BI OR 21324-40-3/BI OR 2141-62-0/BI OR  
260362-83-2/BI OR 29935-35-1/BI OR 311346-25-5/BI OR  
56756-91-3/BI OR 616-38-6/BI OR 623-53-0/BI OR  
62957-60-2/BI OR 7782-42-5/BI OR 7791-03-9/BI OR  
852995-04-1/BI OR 90076-65-6/BI OR 96-49-1/BI)  
D SCAN

FILE 'STNGUIDE' ENTERED AT 10:18:05 ON 06 AUG 2008

FILE 'REGISTRY' ENTERED AT 10:19:23 ON 06 AUG 2008

L3 10 SEA ABB=ON PLU=ON L2 AND 1-99/LI  
D SCAN

L4 1 SEA ABB=ON PLU=ON 14283-07-9/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 10:22:21 ON 06 AUG 2008

D SCAN L1

FILE 'REGISTRY' ENTERED AT 10:22:22 ON 06 AUG 2008

L5 1 SEA ABB=ON PLU=ON 21324-40-3/RN  
D SCAN

L6 1 SEA ABB=ON PLU=ON 29935-35-1/RN  
D SCAN

L7 1 SEA ABB=ON PLU=ON CL4LI/MF  
D SCAN

E C2F6LINO4S2/MF

E LIN/MF

E LITHIUM TRIFLATE/CN

L8 1 SEA ABB=ON PLU=ON LITHIUM TRIFLATE/CN  
D SCAN

E C2H2F6O4S2.LIN/MF

E C2H2F6O4S2.LI/MF

E "METHANESULFINIC ACID, 1,1,1-TRIFLUORO-, LITHIUM SALT

L9 1 SEA ABB=ON PLU=ON "METHANESULFINIC ACID, 1,1,1-TRIFLU  
ORO-, LITHIUM SALT (1:1)"/CN  
D SCAN

E C H F3 O2 S . LI/MF

E C H F3 O2 S . LIN/MF

E C2 H2 F6 O4 S2 . LIN/MF

E C H F3 O2 S .1/2 LIN/MF

L10 0 SEA ABB=ON PLU=ON 1/LI AND 1/N AND 2/C AND 6/F ANF  
4/O AND 2/S

L11 699 SEA ABB=ON PLU=ON (LI(L)C(L)N(L)F(L)S(L)O)/ELS(L)6-7/  
ELC.SUB

FILE 'HCAPLUS' ENTERED AT 10:41:30 ON 06 AUG 2008

D SCAN L1

FILE 'REGISTRY' ENTERED AT 10:41:30 ON 06 AUG 2008

# 10/731,268-267472-EIC 1700 SEARCH

L12 8 SEA ABB=ON PLU=ON L2 AND ?NITRILE?/CNS  
D SCAN

L13 6 SEA ABB=ON PLU=ON L2 AND ?CARBONAT?/CNS  
D SCAN

FILE 'STNGUIDE' ENTERED AT 10:43:15 ON 06 AUG 2008

FILE 'LREGISTRY' ENTERED AT 10:44:36 ON 06 AUG 2008

L14 STR

FILE 'REGISTRY' ENTERED AT 10:59:49 ON 06 AUG 2008

L15 50 SEA SSS SAM L14

FILE 'LREGISTRY' ENTERED AT 11:01:03 ON 06 AUG 2008

L16 STR L14

FILE 'REGISTRY' ENTERED AT 11:01:24 ON 06 AUG 2008

L17 50 SEA SSS SAM L16

L18 SCR 1918 OR 2043 OR 1839 OR 1946 OR 1994 OR 2008

L19 33 SEA SSS SAM L16 NOT L18

L20 SCR 1918 OR 2043 OR 1839 OR 1946 OR 1994 OR 2008 OR 202

L21 30 SEA SSS SAM L16 NOT L20  
D QUE STAT L19

L22 632 SEA SSS FUL L16 NOT L20  
SAV TEMP L22 WEI268REG/A

L23 3 SEA ABB=ON PLU=ON L2 AND L22  
D SCAN  
D SCAN L12  
D SCAN L13  
D SCAN L4  
E C2 H F6 N O4 S2 . LI/MF

L24 1 SEA ABB=ON PLU=ON C2 H F6 N O4 S2 . LI/MF  
D SCAN  
E LITHIUM PERFLUORO SULFONATE/CN  
E LITHIUM PERFLUOROSULFONATE/CN

L25 9 SEA ABB=ON PLU=ON ?LITHIUM?/CNS AND ?PERFLUORO?/CNS  
AND ?SULFONATE?/CNS  
D SCAN

L26 14 SEA ABB=ON PLU=ON L24 OR L25 OR (L4 OR L5 OR L6 OR  
L7)

L27 486 SEA ABB=ON PLU=ON L22 AND 1/NR

L28 146 SEA ABB=ON PLU=ON L22 NOT L27

FILE 'LREGISTRY' ENTERED AT 11:16:17 ON 06 AUG 2008

L29 STR L16

FILE 'REGISTRY' ENTERED AT 11:16:57 ON 06 AUG 2008

L30 4 SEA SUB=L22 SSS SAM L29  
D SCAN

L31 110 SEA SUB=L22 SSS FUL L29

L32 61 SEA ABB=ON PLU=ON L31 NOT 1-9/NR

FILE 'HCAPLUS' ENTERED AT 11:18:36 ON 06 AUG 2008

L33 10769 SEA ABB=ON PLU=ON L26

L34 53 SEA ABB=ON PLU=ON L32

L35 1 SEA ABB=ON PLU=ON L33 AND L34  
D SCAN

L36 13366 SEA ABB=ON PLU=ON L27

L37 3038 SEA ABB=ON PLU=ON L33 AND L36

L38 1 SEA ABB=ON PLU=ON L37 AND L34

L39 24100 SEA ABB=ON PLU=ON L13

L40 5994 SEA ABB=ON PLU=ON L33 AND L39  
D QUE

L41 1243 SEA ABB=ON PLU=ON L12

L42 13 SEA ABB=ON PLU=ON L40 AND L41

FILE 'REGISTRY' ENTERED AT 11:23:50 ON 06 AUG 2008



# 10/731,268-267472-EIC 1700 SEARCH

L43 D SCAN L13  
2 SEA ABB=ON PLU=ON L2 AND ?DIOXOLAN?/CNS

FILE 'REGISTRY' ENTERED AT 11:24:35 ON 06 AUG 2008

FILE 'HCAPLUS' ENTERED AT 11:24:56 ON 06 AUG 2008

L44 18380 SEA ABB=ON PLU=ON L43  
L45 5828 SEA ABB=ON PLU=ON L33 AND L44  
L46 13 SEA ABB=ON PLU=ON L45 AND (L34 OR L41 OR L32)  
L47 13 SEA ABB=ON PLU=ON L35 OR L38 OR L42 OR L46  
L48 QUE ABB=ON PLU=ON ELECTROLYT?  
L49 13 SEA ABB=ON PLU=ON L47 AND L48  
L50 QUE ABB=ON PLU=ON BATTER?  
L51 12 SEA ABB=ON PLU=ON L49 AND L50  
L52 13 SEA ABB=ON PLU=ON L49 OR L51  
SAV TEMP L52 WEI268HCP/A  
D QUE L52  
D L52 1-13 IBIB ED ABS HITSTR HITIND